

# CEFS NEWS

NOVEMBER 2004

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## 1. FROM THE DIRECTOR

I have been sequestered in my office the last month (sadly so!) developing the NSF Integrative Graduate Education and Research Training proposal (IGERT). This is a collaborative project with NC State, Duke, and NC A&T and develops a joint PhD minor in Sustainable Agriculture. The possibilities are exciting and we look forward to working with our new partners if the grant is successful.

Dr. Paul Mueller received a grant from the non-profit organization HasNa to provide sustainable agriculture training to a group of agricultural professionals from Turkey. Many CEFS faculty and students are participating in the program. The two-week training is taking place November 1- 12. Activities at CEFS are being combined with lectures, group participatory activities, farm tours and visits to various nearby research facilities. Nathan McClintock is providing daily coordination for the group. We also hosted another group of international visitors in the last week of October. Sixty university students from the National Agricultural University in Honduras toured CEFS as part of their senior requirement.

Our work to strengthen ties to the local community continues. On September 10<sup>th</sup> we hosted the County Manager for Wayne County, the President of Wayne Community College and other key Wayne County leaders to discuss ways we might increase awareness of CEFS activities in the county and to facilitate more interaction with county programs. The meeting was very successful and resulted in a plan to host a larger group for a tour, lunch, and discussions on December 9<sup>th</sup>. If you are interested in participating, please let me know.

Many CEFS faculty and students are participating in and giving talks at the upcoming CFSA conference that will be held in Ashville November 11-13. It promises to be a great event, and I encourage as many as possible to attend. We are working to host at least part of the CFSA conference next year at CEFS in order to use the facility for hands-on workshops.

*Finally, please mark these dates on your calendar: December 16 is the annual stakeholder meeting (location, TBA) and December 17 is the annual appreciation lunch for the farm crew and staff at CEFS. All are welcome!*

**---DR. NANCY CREAMER**

## 2. FROM THE FARM SUPERINTENDENT

The last month has been a busy time with harvest and the NC State Fair. Our staff helped to construct and man the Healthy Farm, Healthy Family display and the Field of Dreams for the State Fair. We are just beginning to harvest soybeans and have finished harvesting the corn, cotton, peanuts and sweetpotatoes. Most of the cover crops have also been planted, and our winter forages in the beef and dairy operations are being grazed.

Plant Industry is doing a final farm-wide assessment of spiderwort for the year. Additional staff has been brought in to survey station property. We will be posting an updated map of spiderwort locations at the office check-in for your information. Updated guidelines will also be posted to assure we comply with requirements.

The swine hoop house project is close to being submitted for bids, and the final design of the hoop house facilities is being reviewed. Morgan Morrow has agreed to work as the project coordinator for the swine operation.

Eighteen grass-fed were offered for sale from the beef operation. Bids opened on November 2<sup>nd</sup>.

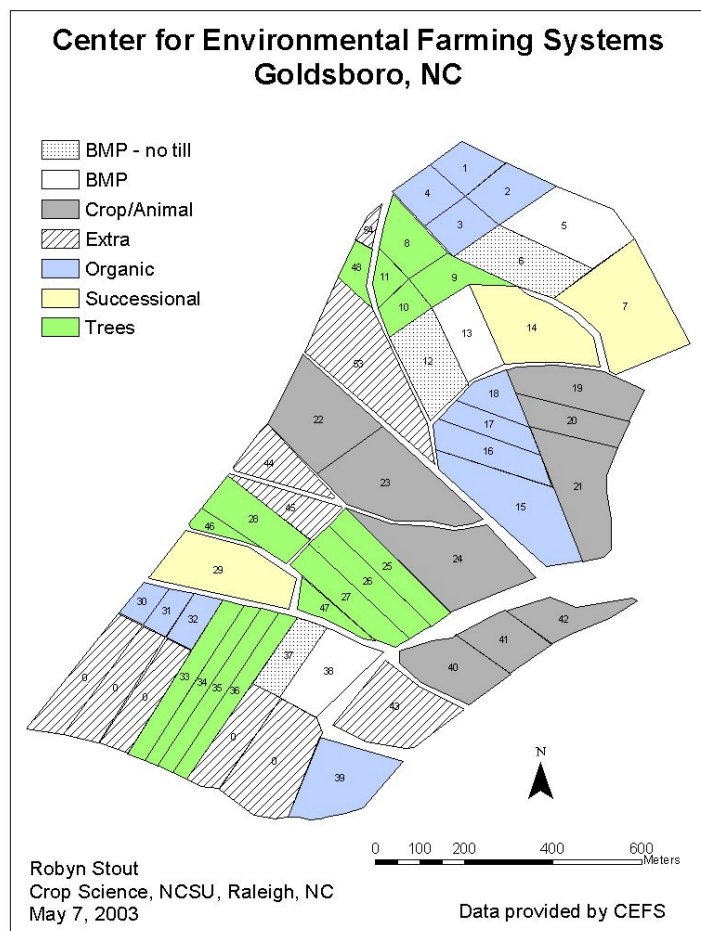
---EDDIE PITZER

## 3. FARMING SYSTEMS RESEARCH UNIT

Harvest of sweetpotatoes has been completed and peanuts have been dug and are awaiting the combine at this writing. Another major accomplishment in the FSRU is the establishment of the cool-season pasture component (MaxQ tall fescue) in fields 19, 23 and 42. The warm-season component will be seeded in the spring. This new strategy will allow us to avoid a one-year loss of productivity during the establishment of new pasture because the fescue component will be ready to graze in the spring, 2005. The warm-season component will be ready late in 2005 or early 2006. Fields 21, 24 and 40 are cycling out of pasture and will go into crop production in 2005. A meeting of the research team took place on October 18 2004 to help in preparation for the final report to SARE, bring together data from a 5-year publication of results and to discuss changes in the crop rotation.

The problem with the federally noxious weed *Commelina benghalensis* L., a.k.a. tropical spiderwort or benghal dayflower, continues to disrupt our normal operations. A GIS map is being constructed that shows GPS locations of all infestations found during 2004. This will help to formulate an eradication plan and to provide a basis for progress in control and eventual elimination of this weed from the unit.

---DR. PAUL MUELLER



#### **4. DAIRY UNIT RESEARCH REPORT:**

### **The Effects of Milk Feeding Period on Growth and Resilience from Nematodal Load in Semi-Organically Reared Dairy Calves.**

*Bianca M. Thompson, Steven P. Washburn, Jean-Marie Luginbuhl, and Brinton A. Hopkins*

The study objective was to investigate whether a longer milk feeding period in dairy calves being raised semi-organically will enable such calves to withstand and recover from exposure to roundworms in a pasture-based feeding system. We hypothesized that calves that are fed milk for a longer period of time will be able to sustain the parasite load, develop resistance, and then maintain growth rates sufficient for viable organic production.

There were two phases to this project. Phase 1 involved a 2 x 2 factorial arrangement of treatments: calves were weaned at 2 different ages and either received or did not receive treatment with an anthelmintic to reduce internal parasites. The trial included 36 Holstein and Jersey x Holstein crossbred steer calves born in fall and winter of 2003-2004 at CEFS and stratified into 4 groups of 9 calves based on birth weights and breed composition. Each group had similar average birth weights (35.4-37.5 kg) and similar average breed composition (64-75% Holstein). Eighteen of the calves were treated at 12 weeks +/- 3 days of age and again at 20 +/- 2 weeks regardless of parasite load) with ivermectin as a pour-on formulation at 1mL per 10 kg of live weight. Calves received 1 to 2 gallons of whole milk per day primarily from fresh cows and mastitis-treated cows After an initial training period of 7 to 10 days to ensure that all calves could drink from a bucket, milk was fed in troughs to small groups until respective weaning ages at 6 weeks or 12 weeks of age.

Weights and fecal samples on each calf were collected at 4-week intervals from birth through 36 weeks of age). Average daily gains were calculated and fecal egg counts were determined from the fecal samples using the Modified Wisconsin technique. The average daily gain was calculated for each group and then the four groups were compared to each other to determine if a significant difference existed among average daily gains.

Average gains were similar across the 4 treatment groups through Phase 1 of the project as illustrated by the mean body weights graphed in Figure 1. Because fecal egg counts were generally below a threshold of 500 eggs per gram during Phase 1 (Figure 2), we concluded that they were not sufficiently burdened to effect a change in gains among the 4 groups through 36 weeks of age.

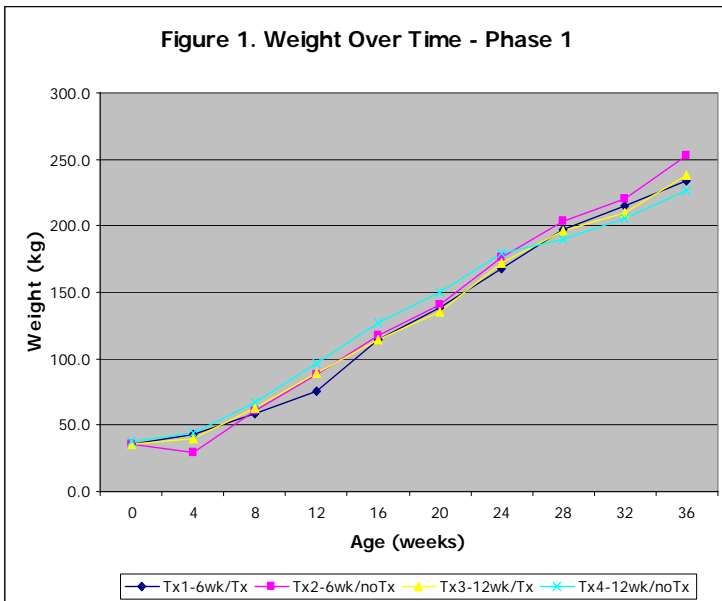
Because fecal egg counts began to increase in late spring and summer, we decided to conduct Phase 2 of the project with expectations that treated animals would have an advantage over untreated animals through the summer and fall. Phase 2 started on July 15<sup>th</sup> using the same calves as Phase 1 without changing the assigned treatment groups. All 18 previously treated calves were dewormed again with ivermectin on July 15<sup>th</sup> and again September 23<sup>rd</sup> at the rate of 1mL per 10 kg body weight. This ensured keeping the parasite load low in both early-weaned and late-weaned dewormed groups. Monthly weights, fecal samples, and jugular blood samples were taken and will continue to be taken until November 18<sup>th</sup>, 2004. As in Phase 1, fecal samples are analyzed for fecal egg counts. Blood samples will be analyzed for serum Pepsinogen levels as an indicator of the effect of parasites (particularly *Ostertagia*) on the abomasums of treated versus untreated calves. Average daily gains again will then be compared to determine if differences exist among treatments.

Although there was some divergence of weight gains at the end of the spring season as parasite loads began to increase, we have not observed large differences in gains that we expected before the study (Figures 1 and 3). Parasite loads as indicated by eggs per gram of feces increased in all groups in May through July (Figure 2) and decreased to very low levels in treated animals after the July 15<sup>th</sup> deworming (Figure 4). Interestingly, untreated calves also had lower fecal egg counts in late July and August than on July 15, perhaps

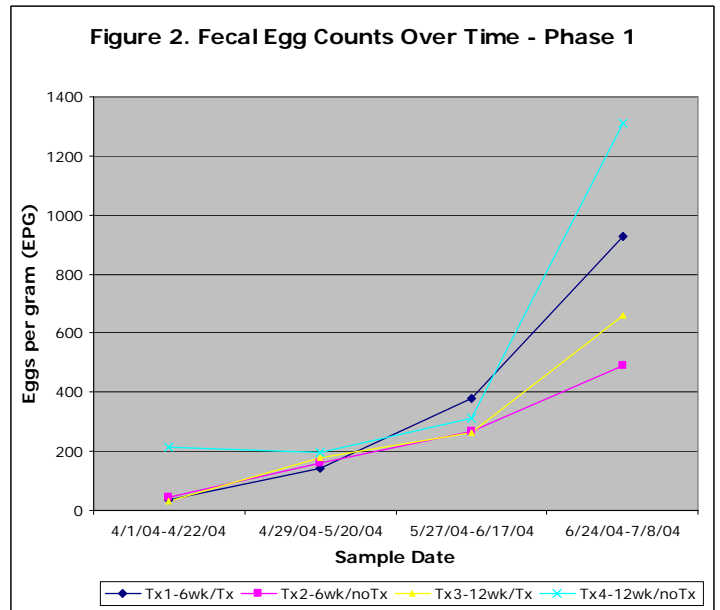
related to a more inactive period in late summer when parasites have gone into hibernation and are not causing physiological damage. The study will continue until November 18, 2004, to provide a year-long evaluation of parasite loads and weight gains in fall-born dairy calves.

In conclusion, we have not seen that increasing the weaning age of calves has a positive physiological effect on calf resistance to parasite infection. It also appears that the groups that were dewormed multiple times have not performed significantly better than the groups that are not treated. These results provide some initial information that may be useful to farmers who are considering growing cattle organically in pasture-based systems. For producers that choose non organic production systems, results from this study are potentially useful in determining optimal timing for use of anthelmintics.

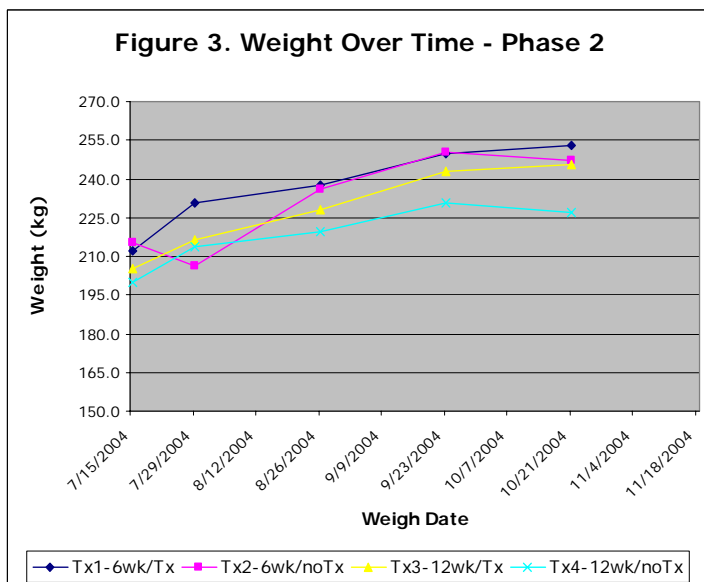
**Figure 1. Weight Over Time - Phase 1**



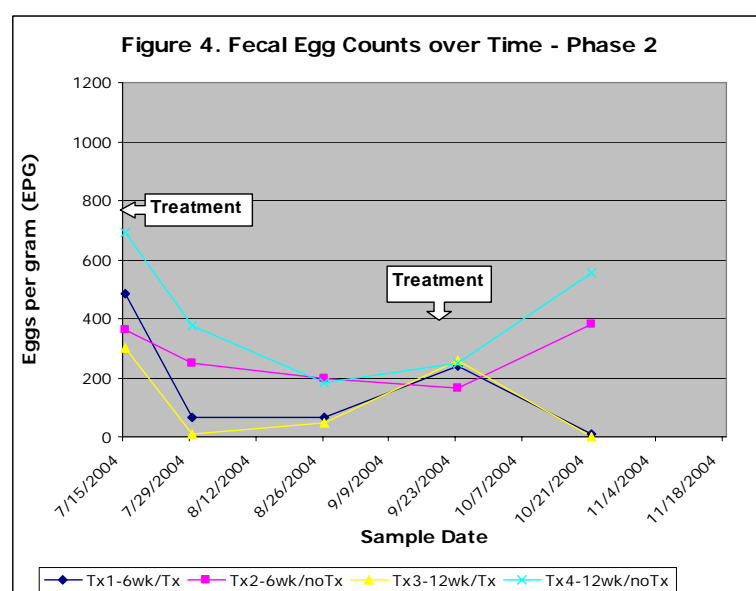
**Figure 2. Fecal Egg Counts Over Time - Phase 1**



**Figure 3. Weight Over Time - Phase 2**



**Figure 4. Fecal Egg Counts over Time - Phase 2**



## **5. NEWS FROM THE BEEF UNIT**

Things are going well at the Beef Unit. We are at the point in our annual production cycle where the calves have been weaned and are in a growing program being fed hay and a small amount of grain supplement, and the cows are dry (non-lactating) and being fed hay. The lightest third of the steer and heifer calves will be sold in mid-November, and the top two thirds of the steers will be moved to Butner, NC, to the NCSU Beef Cattle Field Laboratory where they will be fed in the feedlot. The heifers will be run on grass over the winter. The top cut of the heifers (20 head) will be saved for herd replacements, and the remainder will be designated to our grass-finished beef program. The 18 grass-finished heifers from last year's calf crop weigh about 1000 lbs and will be sold through a sealed bid process in November.

October and early November usually give us the least available grazing of the year because the summer forages (crabgrass, bermudagrass and dallisgrass) have played out, but the winter annuals (primarily ryegrass) have not made much growth yet. The fescue pastures do give us some grazing during the fall, but usually not enough for a significant part of the herd. Once we get into later November and early December, if moisture is plentiful and the temperatures are normal, we usually have a significant amount of ryegrass for grazing. This ryegrass is primarily used for the replacement heifers, and if there is enough we also usually graze the cows on it as well.

In years where we have very favorable growing conditions, the brood cow herd gets a significant amount of fall and early winter grazing on ryegrass. This is great "nutritionally", but we have noticed that this seems to be associated with higher birthweight in calves, and more calving difficulty, especially in the first calf heifers. These problems have also been experienced in commercial settings, but there is no research data that connects grazing high quality forage in the fall and early winter with calving difficulty in late winter calving herds. To address this question, we have initiated a study this year that will probably continue for 3 years. The cows that are expected to calve in the first week of the calving season (63 head) were split into two groups, with one group being fed on a ration of medium quality hay, and the other group grazing high quality ryegrass. We are monitoring forage quality, as well as weight and body condition changes for each group, and they will be recombined about January 1, several weeks before calving begins. We will measure birthweights of the calves, as well as calving difficulty rate, and we will also see if there is an influence on the subsequent growth of the calves. This study is being directed by Mrs. April Shaeffer, a technician in the Animal Science Forage/Ruminant Nutrition lab, and Miss Emily Glover, an undergraduate research associate. We have been blessed with a good group of undergraduates in our lab this year, and in discussing project possibilities, Emily decided this project best fit her interests. She is interested in going into either veterinary or graduate school, and this project will give her some experience with grazing management, feed analysis, calving management, and conducting research on an off-campus experiment station.

## **6. THE ORGANIC UNIT**

The organic unit farm just finished training of two special visitors: Benjamin Bathfield from France and Fereste Sonneus from Haiti. Benjamin was with us from July 30 until October 15, and Fereste was here for two weeks from September 27 to October 8. Benjamin was fulfilling internship requirements for his school - Ecole Superieure d'Agriculture de Purpan in Toulouse, France. He is in the 4th year of a five year training program. He did a marvelous job working with farm manager, Bryan 'Busha' Green, and full season intern, Maria Miranda Gomez. Being a student at an agricultural technology school, he was quite adept in dealing with farm equipment. He was particularly helpful in guiding Fereste through his visit as they were both communicating in their mutual native language - en francais. Fereste was here to gain organic production knowledge. He is responsible for a

farm producing food for the hospital of Zanmi Lasante (Partners in Health). He hopes to eventually obtain a career in sustainable agriculture and work towards good health for all people.

In other news related to the organic unit, we thank Ken Fager for helping us plant a farm scale replicated, randomized plot of winter cover crops. It was placed in the organic transitional area east of the central work buildings. It will compare triticale, winter rye, winter wheat and rye/crimson clover for biomass production. It was primarily planted as a demonstration for the HasNa training program occurring in the first part of November. Hopefully, there will be enough vegetation for our visitors from Turkey to observe some initial differences.

**---DR. PHIL RZEWNICKI**

## **7. WHAT'S GROWING AT THE STUDENT FARM**

Aside from a small fall garden of broccoli, cabbage, kale and collards, the Student Farm is in cover crops for the fall. Our international student from Venezuela, Maria, is completing her research project in greenhouse cucumber production using vermicompost and stays busy helping others at CEFS gather field data. Maria will remain on the farm until the end of November. If anyone has special projects or learning opportunities for Maria or is in need of her assistance, please contact Bill Perry at CEFS. Two of the three international students have left to return to their home countries. We said good-bye to Ferest from Haiti and Benjamin from France. We wish them well and are so grateful for their time here.

Two planning meetings were held this fall regarding the Student Farm and the internship program. The details from these meetings are being formed into a new approach to the internship for 2005. The internship will continue as an 8-week program, but will have some changes in format to improve efficiency of educational opportunities and ease the management demands on the farm manager.

The Student Farm is also working to expand its programs by creating year-round opportunities for 2005. Short training sessions or seminars can be offered that can be tailored to fit a group's interests and needs. Some target audiences that have been mentioned include groups such as school teachers, environmental educators and international agronomists. People are excited about these new programs that will extend the educational opportunities across a broad public spectrum. In 2005 the student farm will also integrate nutrition as an educational component. Signage regarding nutritional values of crops and a seminar on nutritional gardens will be designed in the spring. The Student Farm is definitely in a growth stage.

Among the many upcoming changes at the Student Farm is its name. Our idea is to give the farm a name that will generate a broader attraction beyond the students that attend the summer internship. We are accepting suggestions at this time if anyone has any ideas regarding new names. Please send your suggestions to Busha (bfgreen@ncsu.edu). Some of the suggestions so far include: Small Farm Unit (SFU), Educational Farm, Family Farm Center, Organic Unit Farm, and Small Farm Center. Another change in the CEFS vernacular: full season interns are now "apprentices."

**---BRYAN 'BUSHA' GREEN**

## **8. NC CHOICES SMALL SCALE HOG PRODUCTION PROJECT**

North Carolina CHOICES, the new alternative hog production project at CEFS, is recruiting farmers interested in small-scale hog production and direct marketing through Community Supported Agriculture (CSA). The goal of the project is to connect local consumers with farmers producing antibiotic-free, sustainably-raised, or certified organic pork (farmers choose one of these production models and raise the pigs according to the

appropriate standard). The CHOICES program will provide advertising, marketing, production, and logistical support to participating farmers.

If you are interested in becoming a participating farmer or know someone who might be, contact Susan Jelinek at 919-513-7346 or [susan\\_jelinek@ncsu.edu](mailto:susan_jelinek@ncsu.edu). More information about CSAs and North Carolina CHOICES (including an application) can be found on the Growing Small Farms website: <http://www.ces.ncsu.edu/chatham/ag/SustAg/csa.html>.

---SUSAN JELINEK MELLAGE

#### **9. ORGANIC LIVESTOCK TRAINING AND DEVELOPMENT**

There is growing interest around the state in promoting and developing the certified-organic meat and dairy market in North Carolina. CEFS recently sponsored viewings of the Organic Livestock Satellite Training Broadcast from Washington State University. At four sites around the state, extension personnel and farmers met to take part in the introductory training session that featured farmers, ranchers, and experts on organic livestock production. The CEFS Organic Grains project and NC CHOICES program are both working to develop and organize the necessary resources for farmers interested in producing organic meat and dairy products in North Carolina.

This year's CFSA conference will be a great way to meet up with people working to develop this market in the Carolinas. The "Pasture-based Livestock" and "Livestock Issues" Tracks will feature many different speakers and discussions about the small-scale production and processing.

---SUSAN JELINEK MELLAGE

#### **10. COURSES OF INTEREST FOR SPRING 2005**

Greenhouse Food Crops (HS 590c) will be offered by Dr. Mary Peet at 3:40 on Tuesdays and Postharvest Physiology (HS 462/590r) will be offered by Dr. Doug Sanders at 3:40 on Wednesdays. In addition to NCSU campus, both courses will be available on the two way video network at the following sites: Fletcher, Plymouth, UNC-P, Kinston HS, and Bowman Gray. Other sites may be available if two or more students are interested. For registration information, visit [http://distance.ncsu.edu/programs\\_courses/index.html](http://distance.ncsu.edu/programs_courses/index.html) or contact Dennis Osborne, [Dennis\\_Osborne@ncsu.edu](mailto:Dennis_Osborne@ncsu.edu).

Sociological Analysis of Agricultural Development (SOC 756) will be offered this spring by Dr. Michael Schulman. This course is a broad based introduction to the sociology of agricultural development and change in Third World societies. Specific topics include: land tenure and agricultural development; peasants and peasant economy; peasant movements; social and ecological landscapes, and sustainable development. Readings include: Development As Freedom by Amartya Sen, Development and Social Change: A Global Perspective by Philip McMichael, and Bridging Human and Ecological Landscapes by Robert Rhodes. The class will meet Wednesdays from 9:10-12 Noon. For more information contact Dr. Schulman at: [Michael\\_Schulman@ncsu.edu](mailto:Michael_Schulman@ncsu.edu).

Introduction to Agroecology (CS 230) will be taught through the Crop Science Department at NCSU this spring semester. This is the kick off for our newly established Agroecology undergraduate minor program at NCSU. Please be sure to inform undergraduates you know about this course and encourage them to enroll. The success of this new Agroecology program depends on everyone's involvement. Please direct any questions about the Agroecology course or minor program to Dr. Michelle Schroeder, 2406 Williams Hall, NCSU ([michelle\\_schroeder@ncsu.edu](mailto:michelle_schroeder@ncsu.edu)).

## 11. NOTES

### Lunch Anyone?

If you miss spending one lunch hour a week with your friends and colleagues, take action! We are currently seeking a volunteer to coordinate the sustainable agriculture lunchtime program for the 2004-05 school year. Last year, this weekly meeting time was a great opportunity to discuss issues in sustainable agriculture and catch up with one another! If you are willing to serve as the coordinator, or would like to nominate someone to serve as coordinator, please contact Denise Finney (demckinn@ncsu.edu).

### Correction

Our apologies to Dr. Ray McKinnie of NC Cooperative Extension for incorrectly spelling his name in the September newsletter.

## 12. UPCOMING EVENTS IN SUSTAINABLE AGRICULTURE

**November 12-14:** Carolina Farm Stewardship Association presents the 19th Annual *Sustainable Agriculture Conference* in Asheville, NC. Satisfy your hunger for real food at the "Real Food Revival". Visit [www.carolinafarmstewards.org](http://www.carolinafarmstewards.org) or call 919-542-2402 to register.

**November 12-14:** *Biodynamic Farming and Gardening Conference* at the Durham Armory in Durham, NC. For more information about the conference, visit the BFGA website or contact the Josephine Porter Institute for Applied Biodynamics at 276-930-2463.

**November 30:** Chatham County Cooperative Extension presents a *Slow Food and Local Agriculture* from 7:00-9:00 p.m. at the Agricultural Building Auditorium in Pittsboro, NC. Pre-registration is required by November 23. Contact Debbie Roos at 919-542-8202 for more information.

**November 30-December 2:** 19th Annual *Southeast Vegetable & Fruit Expo* and 23rd *Eastern NC Vegetable School* in Greenville, NC. For more information or to register, please contact Bonnie Holloman or Cathy Price at the N.C. Vegetable Growers' Association, 919-334-0099. You can also visit the web site at <http://www.ncvga.com>.

**December 7-9:** NCSU *Farmstead Cheese-Making Short Course* in Raleigh, NC. For more information on the course contact Gary Cartwright or MaryAnne Drake at 919-513-2488.

**December 9:** Chatham County Cooperative Extension presents a *Website Development for Farmers* workshop from 6:00-9:00 p.m. at the Agricultural Building Auditorium in Pittsboro, NC. Pre-registration is required by December 1. Contact Debbie Roos at 919-542-8202 for more information.

**January 21-23, 2005:** *Southern Sustainable Agriculture Working Group (SSAWG) Annual Conference* entitled "Practical Tools and Solutions for Sustaining Family Farms" in New Orleans, LA. View the complete program and get information about lodging and registration at the Southern SAWG website: [www.ssawg.org](http://www.ssawg.org).

Additional information about these and other programs can be found at:  
[www.ces.ncsu.edu/chatham/ag/SustAg/index.html](http://www.ces.ncsu.edu/chatham/ag/SustAg/index.html)



Did we mention the 19<sup>th</sup> Annual CFSA Conference in Asheville?  
The Real Food Revival is Friday, November 12 through Sunday, November 14.  
Register today!

"Season"

Rust is ripeness, rust.  
And the wilted corn-plume.  
Pollen is mating-time when swallows  
weave a dance.  
Of feathered arrows  
Thread corn-stalks in winged  
Streaks of light. And we loved to hear  
Spliced phrases of the wind, to hear  
Rasps in the field, where corn-leaves  
pierce like bamboo slivers.  
Now, garnerers we,  
Awaiting rust on tassels, draw  
Long shadows from the dusk, wreath  
The thatch in wood-smoke. Laden stalks  
Ride the germ's decay-we await  
The promise of the rust.  
By: WOLE SOYINKA

submitted by: Joel Gruver

The CEFS Newsletter is edited by:  
Denise M. Finney  
demckinn@ncsu.edu